

Exhibit D

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division**

United States of America, *et al.*,

Plaintiffs,

v.

Google LLC,

Defendant.

Case No. 1:23-cv-00108-LMB-JFA

Hon. Leonie H. M. Brinkema

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December 22, 2023

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power by ad servers that only facilitated the sale of instream video ads. A publisher’s “monetization toolbox” will likely require many different sorts of tools.³⁵¹

IV.B. Open-web display advertising is a distinct and important form of advertising for publishers and advertisers

- (261) In this section, I discuss why open-web display advertising is a distinct and valuable form of advertising for open-web publishers and advertisers. Within open-web display advertising, I also discuss why *indirect* transactions in particular provide additional value to publishers and advertisers.
- (262) Establishing the importance of open-web display advertising compared to other forms of advertising supports each of the relevant product markets that I discuss in Sections IV.C–IV.E below. This is because if open-web display advertising is distinct and valuable for open-web publishers and advertisers, then these customers would have limited ability to substitute away from *products used to transact such advertising* if those products were priced higher than competitive levels.
- (263) For publishers and advertisers, open-web display advertising satisfies a particular functionality and use case more efficiently or effectively than alternatives. As I discuss in more detail below, digital advertising is distinct from “offline,” or non-digital, advertising. In addition, within the broad category of digital advertising, there are important distinctions between open-web display advertising and other forms of digital advertising from the perspective of both publishers and advertisers that make them not close substitutes. Though the substitutability of open-web display advertising from alternatives will differ across these two sets of customers, as I discussed in Section III.B, products that facilitate the sale of open-web display advertising can comprise a relevant antitrust market even if *only* one of those two sets—publishers or advertisers—do not have close substitutes outside of the market.
- (264) The rest of this Section is organized as follows:
 - In Section IV.B.1, I discuss why publishers obtain distinct value from open-web display advertising relative to other sources of monetization, and why other forms of monetization—although potentially used alongside open-web display advertising for some publishers—are differentiated from publishers’ perspectives.
 - In Section IV.B.2, I discuss why advertisers obtain distinct value from open-web display advertising relative to other forms of digital and non-digital advertising, and why open-web

³⁵¹ Analogously, advertisers may engage in both search and display advertising at the same time, but this does not mean that search advertising tools constrain a hypothetical monopolist of open-web display ad tech products from exercising market power. As I discuss further below, display advertising has features that are distinct and valued by advertisers, and advertisers often use a portfolio of advertising products to achieve their goals and reach different audiences.

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display advertising is differentiated from other forms of advertising from advertisers' perspectives.

- In Section IV.B.3, consistent with the above, I show evidence that Google and other industry participants recognize important distinctions between open-web display advertising and other forms of advertising.
- In Section IV.B.4, I discuss why indirect transactions, and RTB transactions in particular, for open-web display advertising provide additional distinct value to publishers and advertisers compared to direct transactions.

IV.B.1. Open-web display advertising is an important and distinct form of monetization for publishers

(265) Open-web publishers relying on advertising to monetize their digital content often use a portfolio of different forms of advertising.³⁵² In this Section, I discuss why open-web display advertising forms an important part of the monetization portfolio for open-web publishers, and why such publishers will tend to have limited ability to substitute away from display advertising to other forms of advertising. I also discuss why open-web publishers without their own integrated ad tech products cannot easily substitute to using integrated advertising tools to sell display advertising.

(266) Note that open-web publishers that monetize at least some of their web inventory via digital advertising would not likely find substituting completely away from advertising to a consumer-payment model (e.g., subscriptions) to be a close substitute. For publishers that do not currently have a consumer-payment model, adopting a new monetization strategy can be costly and difficult.³⁵³ In particular, a publisher that attempts to adopt a consumer-payment model from scratch must induce consumers to pay for its content, market its product to new customers, and deliver enough value to keep its customers paying. For publishers that already have a consumer-payment model, substituting completely away from advertising would mean forgoing a valuable source of additional revenue.

IV.B.1.a. The sale of display advertising is distinct from other forms of advertising from the perspective of open-web publishers

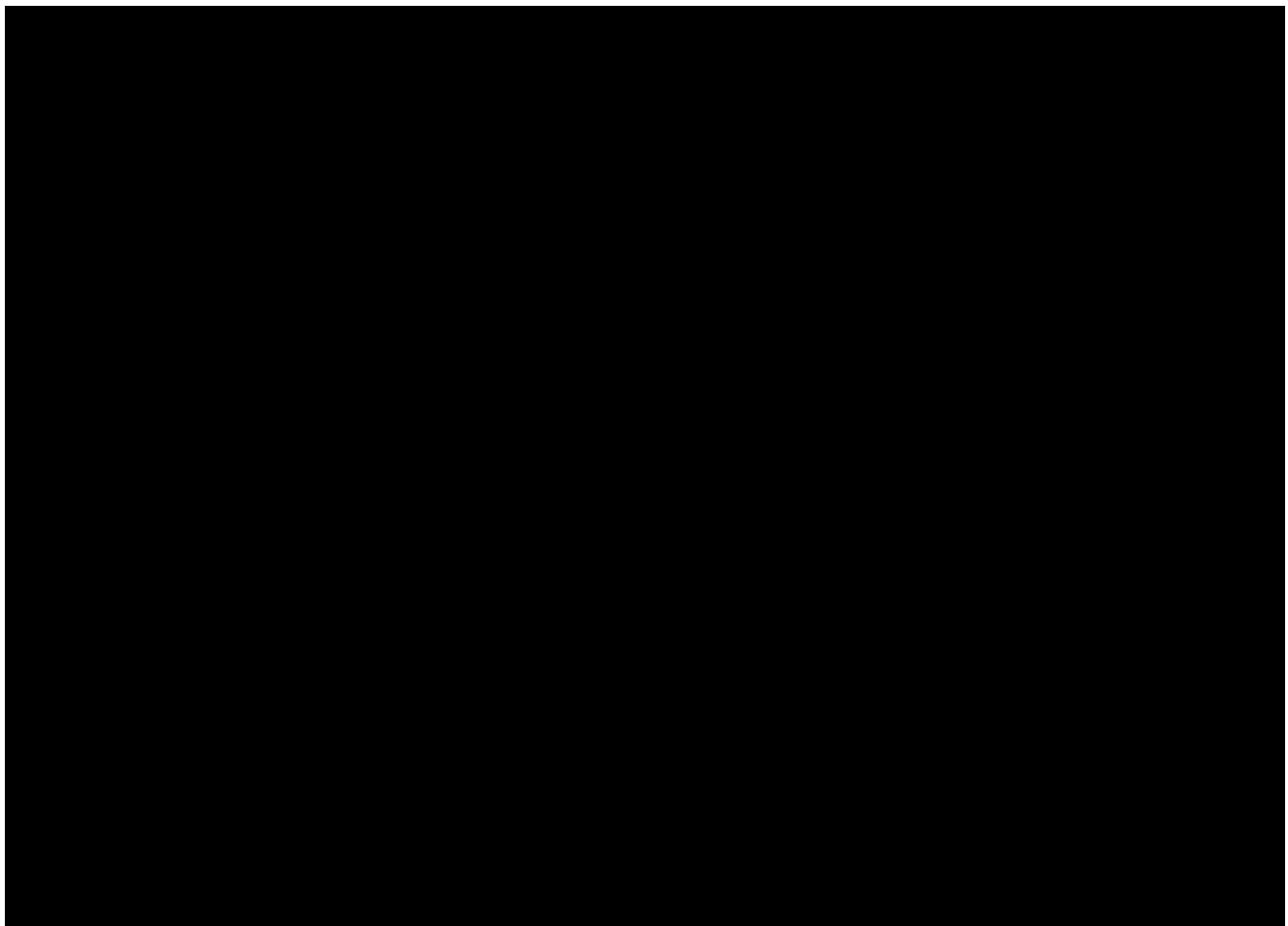
(267) From the perspective of open-web publishers, the sale of display advertising is distinct from selling other forms of advertising. There are two primary reasons for this. First, a publisher may not have content that is suitable for other forms of advertising, such as instream video or in-app content.

³⁵² See Section IV.A.2.

³⁵³ As one academic paper notes, so-called “free-to-fee” changes between advertising to subscription-based models are challenging for publishers because of the tendency of consumers to place a lower value on free (or discounted) content and resist paying for content that had been free (or discounted). Pontus Huotari and Paavo Ritala, “When to Switch between Subscription-based and Ad-sponsored Business Models: Strategic Implications of Decreasing Content Novelty,” *Journal of Business Research* 129 (2021), 14–28.

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Figure 47. [REDACTED]



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V.C.3.b. Google is able to significantly deviate from competitive behavior in the ad exchange market

(511) Evidence that Google has substantial and sustained market power in the ad exchange market includes its ability to meaningfully deviate from competitive behavior in that market.

(512) [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(513) Google limiting AdX's real-time bids into rival publisher ad servers is consistent with Google's ability to deviate from competitive behavior in the ad exchange market. I discuss this conduct further in Section VII.C.

(514) [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].

(515) [REDACTED]

[REDACTED]

⁷⁴² See Section VII.C on Google's exclusive provision of unrestricted access and use of real-time bids from AdX to DFP.

⁷⁴³ [REDACTED]

⁷⁴⁴ See [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

⁷⁴⁵ [REDACTED]

[REDACTED]

[REDACTED]

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(516)

[REDACTED]

(517)

[REDACTED]

[REDACTED]

[REDACTED]

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(518)

V.D. Google possesses substantial and sustained market power in the advertiser ad network market

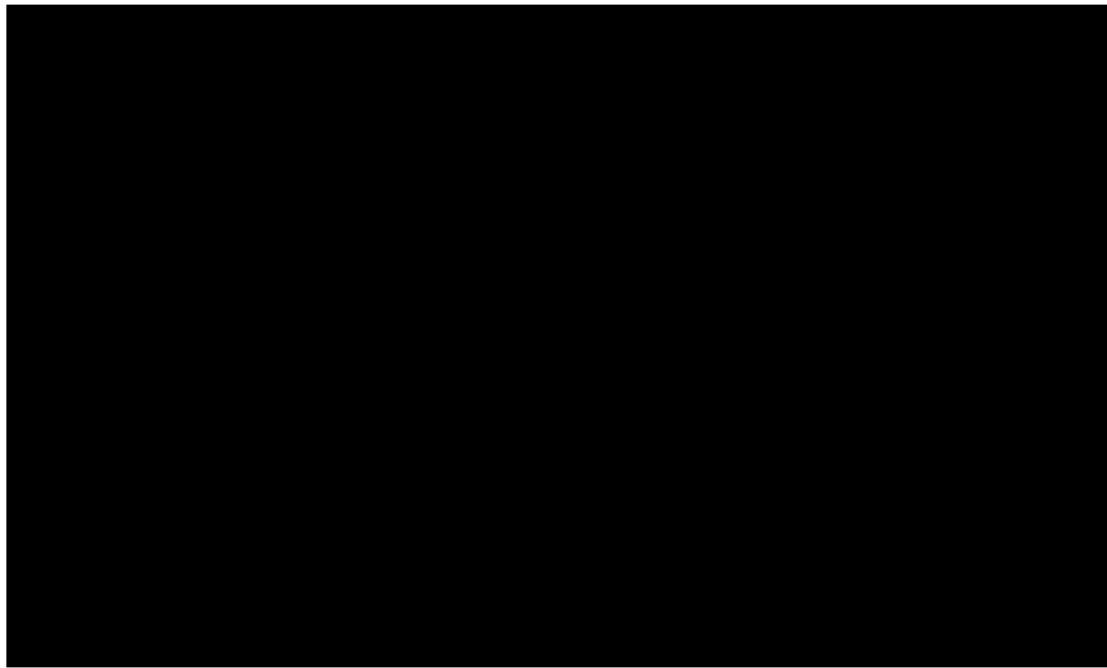
(519) Google's advertiser ad network, Google Ads, is the largest advertiser ad network for open-web display advertising, and possesses substantial market power. In this section,

- I first describe key sources of Google’s market power in the advertiser ad network market (Section V.D.1), which include its unique access to advertiser demand and publisher inventory (including Google’s O&O properties and open-web AdSense publishers) and significant scale advantages over competitors.
- I then provide measures of Google Ads’ market shares and discuss barriers to entry and expansion in the advertiser ad network market (Section V.D.2).
[REDACTED]
[REDACTED]
- Last, I provide direct evidence of Google Ads’ market power (Section V.D.3). This includes:

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VII.F.1.b. Google's exclusive provision of Dynamic and Enhanced Dynamic Allocation to AdX impaired rival ad exchanges' ability to compete for a substantial amount of publisher impressions

(751) As I discussed in Section VII.D.1, Google's exclusive provision of first- and last-look advantages to AdX within DFP disadvantaged Google' ad exchange rivals, granting them fewer and less attractive impressions to bid upon or ultimately win.

(752) [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

(753) [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

1095 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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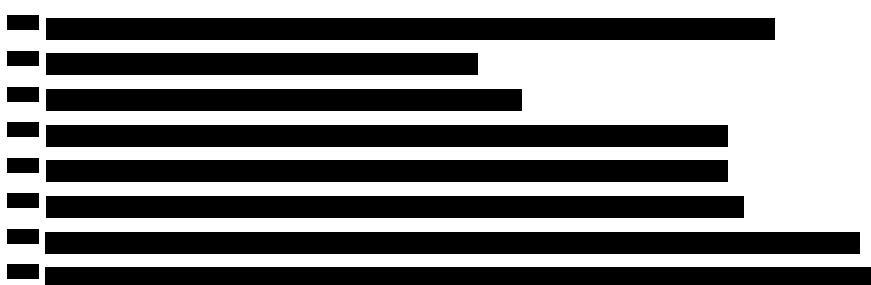
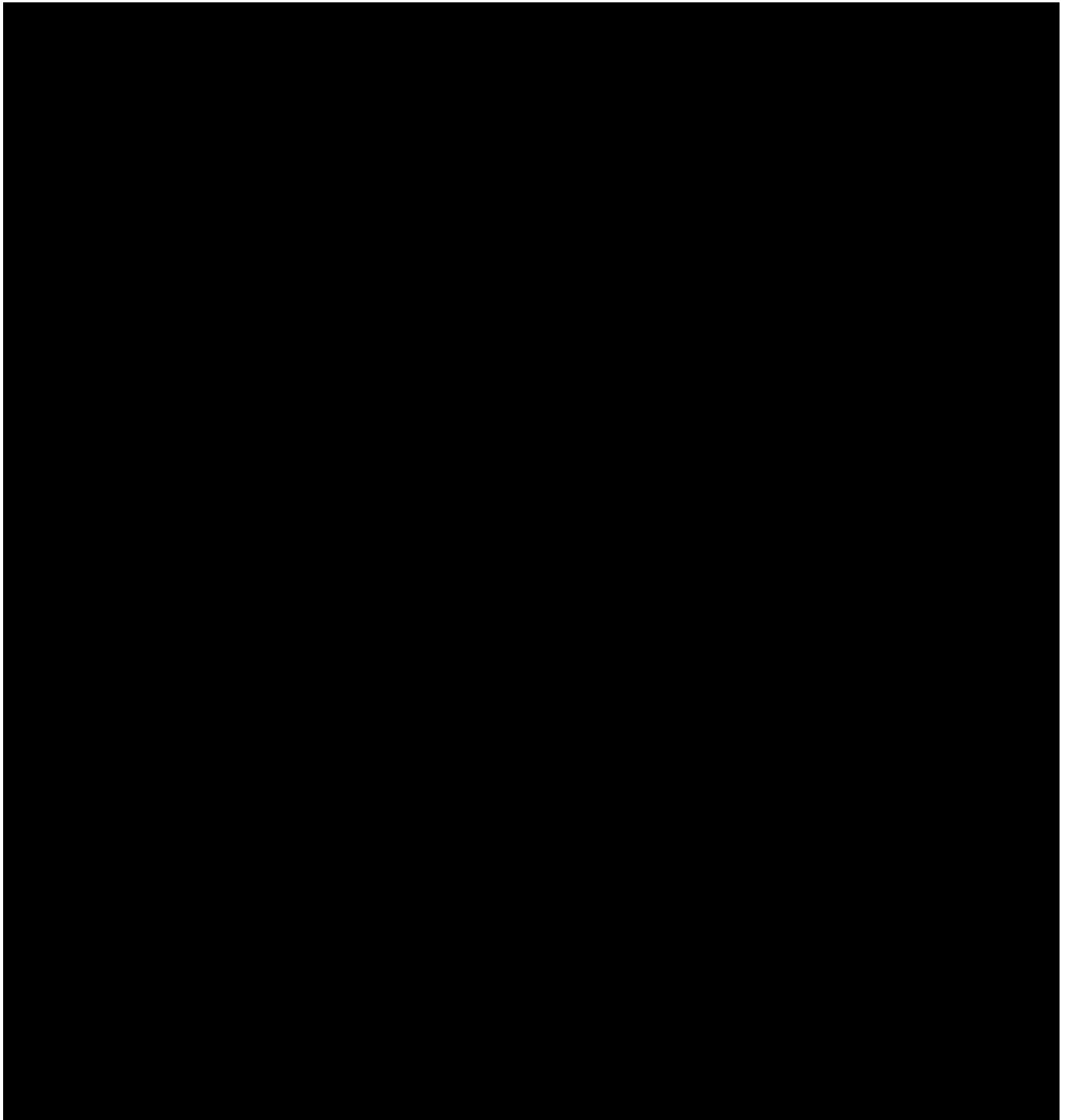
(754)

ANSWER

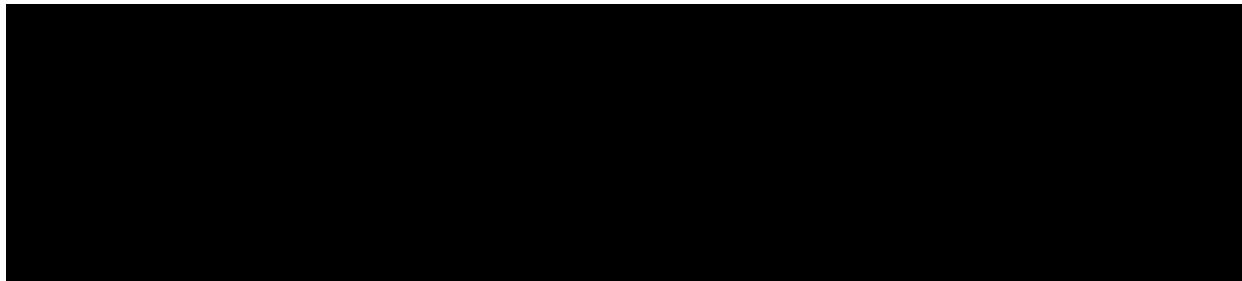
A horizontal bar chart with 10 bars representing different indicators. The x-axis is labeled 'Number of countries' and ranges from 0 to 1098. The y-axis lists the indicators. The bars are black and have thin white outlines. The values for each bar are as follows:

Indicator	Number of countries
1098	1098
1097	1097
1096	1096
1095	1095
1094	1094
1093	1093
1092	1092
1091	1091
1090	1090
1089	1089

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(755) As I discussed in Section VII.D.1, Google opened up Dynamic Allocation access to rival exchanges when Open Bidding fully launched in April 2018 (albeit with an Open Bidding fee), and more broadly in 2019 with the UFPA to also include header bidding exchanges. However, due to the durability of network effects and scale effects described in Sections III.A and III.D, the harm to rivals' competitiveness from Google's conduct likely persists.

VII.F.1.c. Google's variable floor restriction impeded publishers' abilities to sell impressions through rival ad exchanges

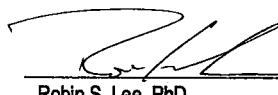
(756) As I discussed in Section VII.D.2, Google's variable floor restriction within UPR impeded publishers' ability to impose competitive pressures on AdX and steer more transaction volumes to rival exchanges by relying on variable pricing floors.

(757) [REDACTED]
[REDACTED]
[REDACTED] Because Google's variable floor restriction increased AdX impressions by preventing publishers from setting higher floors on AdX than on rival exchanges, AdX's increase in impressions contains impressions that were diverted from rival exchanges.

(758) Consistent with Google's estimated effects and the description above, rival exchanges identified a decrease in impressions following the introduction of the variable floor restriction. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

1116 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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Robin S. Lee, PhD

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Date

